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memorandum

TO: Distribution

FROM: Tom Dey T.D.

DATE: June 11, 1985

MAIL STOP/TELEPHONE: C335/7-7140

SYMBOL: ESS-3-874-85

SUBJECT: POSSIBLE FLOW GEOMETRY OF EXPERIMENT 2059

From the core taken from the interval 11600'-11615' in EE-3A we can find the predominant fracture sets at this depth. Assuming the 2059 flow from EE-3A to EE-2 follows these fractures, a simple flow path geometry can be constructed. The length of the shortest possible path along these fractures is 1.7 times the straight line distance between 2059 injection interval in EE-3A and the 2032 injection interval in EE-2.

The fractures in the core can be divided into two sets: Set 1 dipping 65^{o} towards S57W and Set 2 dipping 78^{o} towards S10W. None of these fractures run directly from the 2059 injection interval to the 2032 injection interval. The simplest path available is to leave EE-3A on a fracture from one set and arrive at EE-2 on a fracture from the other set.

Figure 1 shows a stereopair in which flow leaves EE-3A on a fracture from Set 1 and arrives at EE-2 on fracture from Set 2. The view direction is from the southeast. Fig. 2 shows the same geometry from the southwest. EE-2 is located on the hidden planein this diagram. The shortest possible flow path length following fractures is 278m or 1.7 times the direct line distance.

Fig. 3 shows the geometry where flow leaves EE-3A on Set 2 and arrives at EE-2 on Set 1. The view is from the northwest. Fig. 4 is the same geometry viewed from the southwest with EE-2 on the hidden plane. The shortest possible path is again 278m. In both geometries, about 200m the path is along Set 1 or NW-SE and about 77m is along Set 2 or E-W so it probably doesn't matter much which one chooses as most likely.

The available heat transfer area and fracture volume can be estimated from with the aid of Fig. 3 from Robinson's recent tracer memo (Bruce Robinson, "Tracer and Geochemistry Analysis - Expt. 2059", ESS-4-85-151, June 6, 1985). The one-sided area of a 280m diam. circle is about $6.1 \times 10^{4} m^{2}$. Going to Robinson's Fig. 3 gives an estimated reservoir volume of $300 m^{3}$. This is right in the middle of Robinson's $150 m^{3}$-$600 m^{3}$ range of estimate, so this very simple flow path model has some merit.

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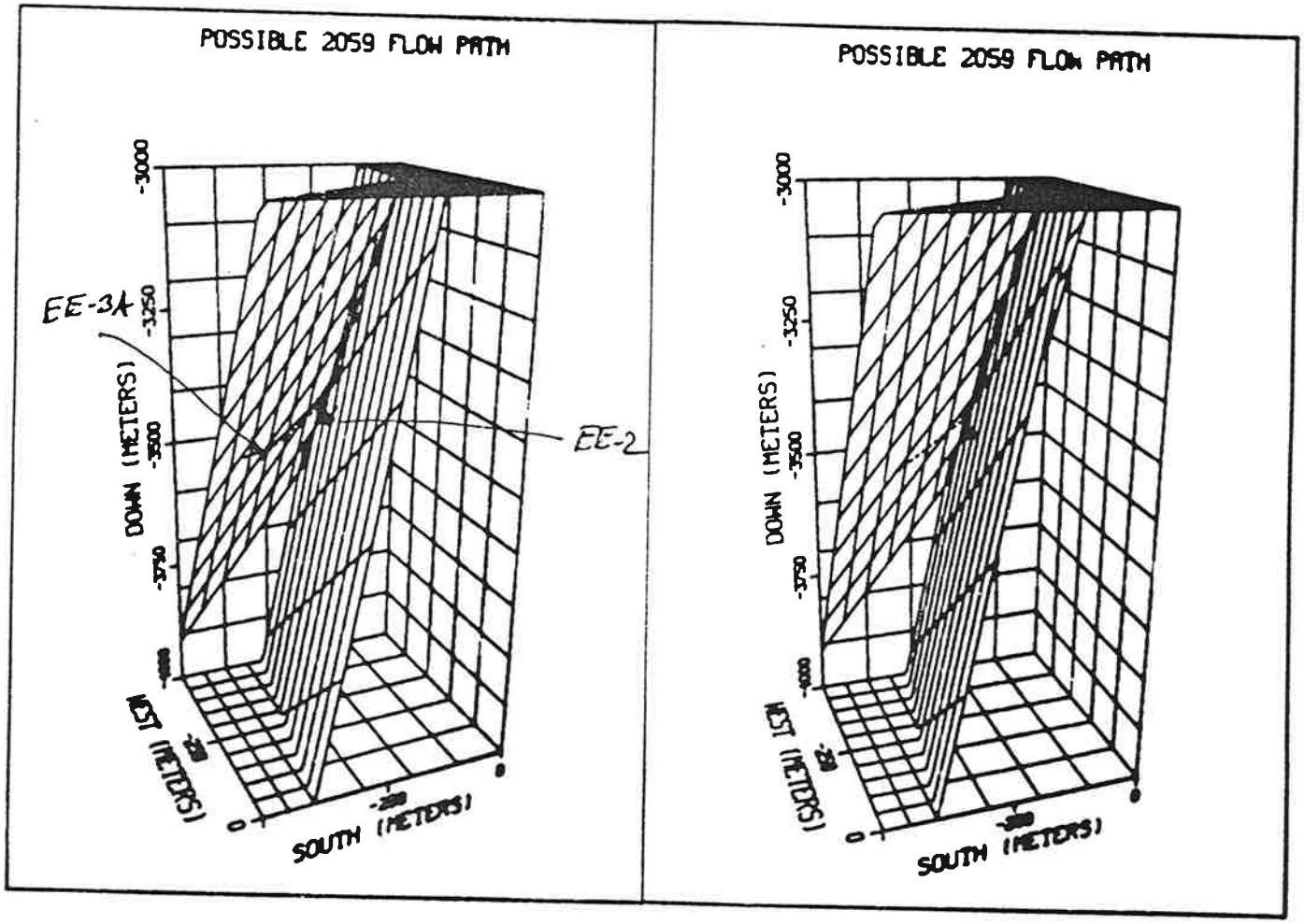
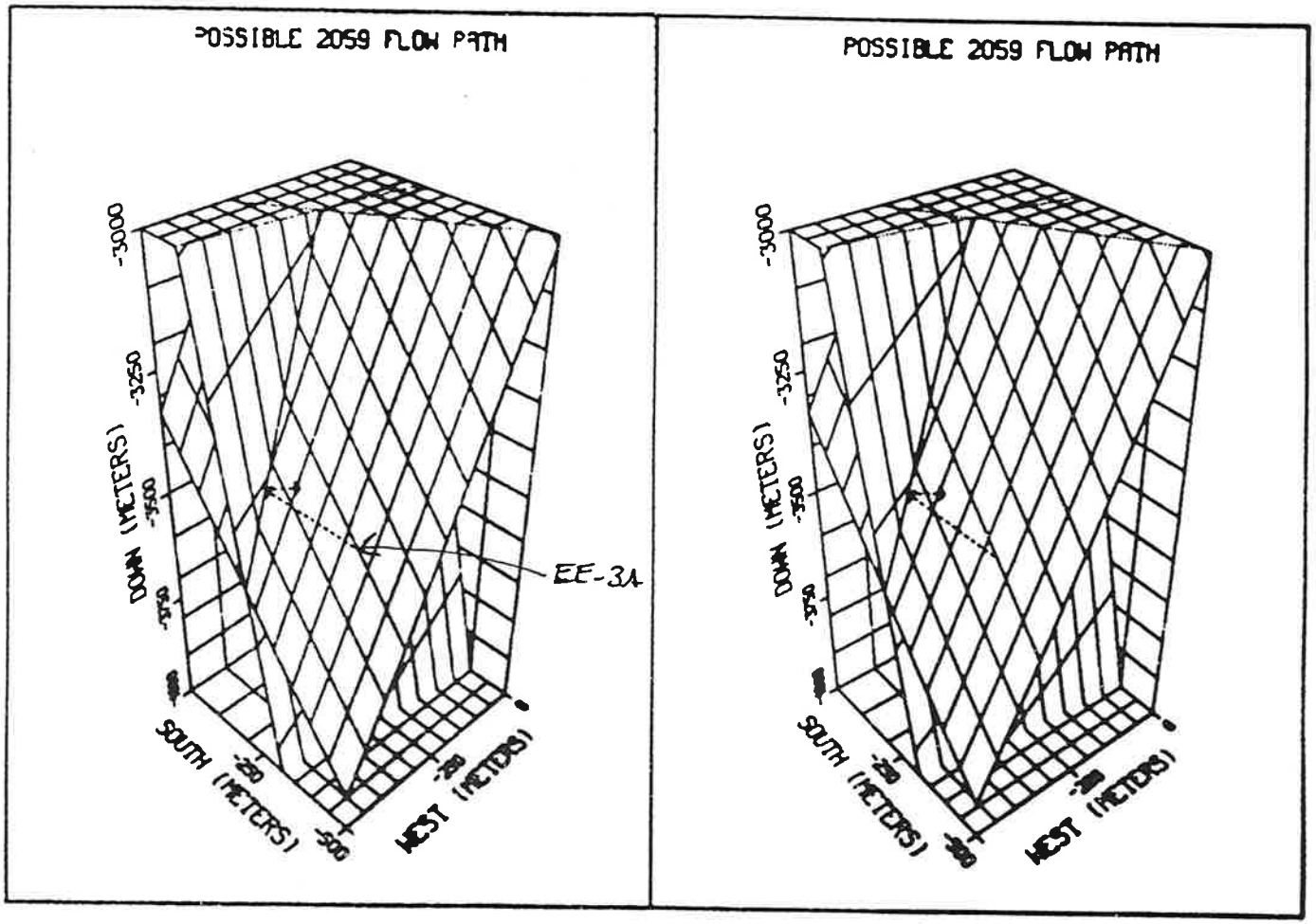
ESS-3 File


POSSIBLE 2059 FLOW PATH
EE-3A
EE-2
DOWN (METERS)
-3000
-3250
-3500
-3750
WEST (METERS)
SOUTH (METERS)
POSSIBLE 2059 FLOW PATH
DOWN (METERS)
-3000
-3250
-3500
-3750
SOUTH (METERS)

L

R

Fig 1


POSSIBLE 2059 FLOW PATH
-3000
-3250
-3500
DOWN (METERS)
SOUTH (METERS)
WEST (METERS)
EE-3A
POSSIBLE 2059 FLOW PATH
-3000
-3250
-3500
DOWN (METERS)
SOUTH (METERS)
WEST (METERS)

L R

Fig 2

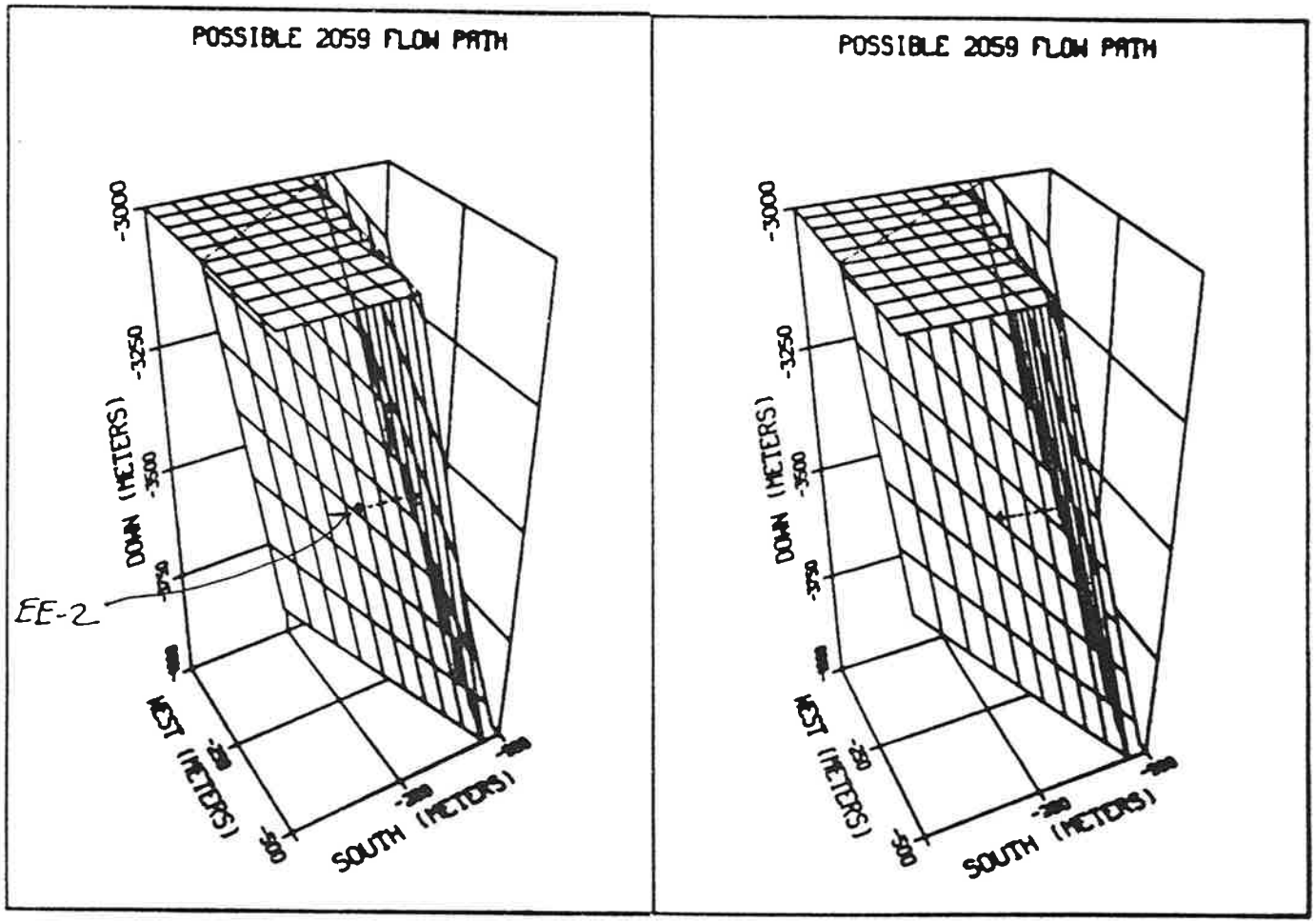

POSSIBLE 2059 FLOW PATH
DOWN (METERS)
-3000
-3250
-3500
EAST (METERS)
SOUTH (METERS)
EE-2
POSSIBLE 2059 FLOW PATH
DOWN (METERS)
-3000
-3250
-3500
EAST (METERS)
SOUTH (METERS)

Fig 3

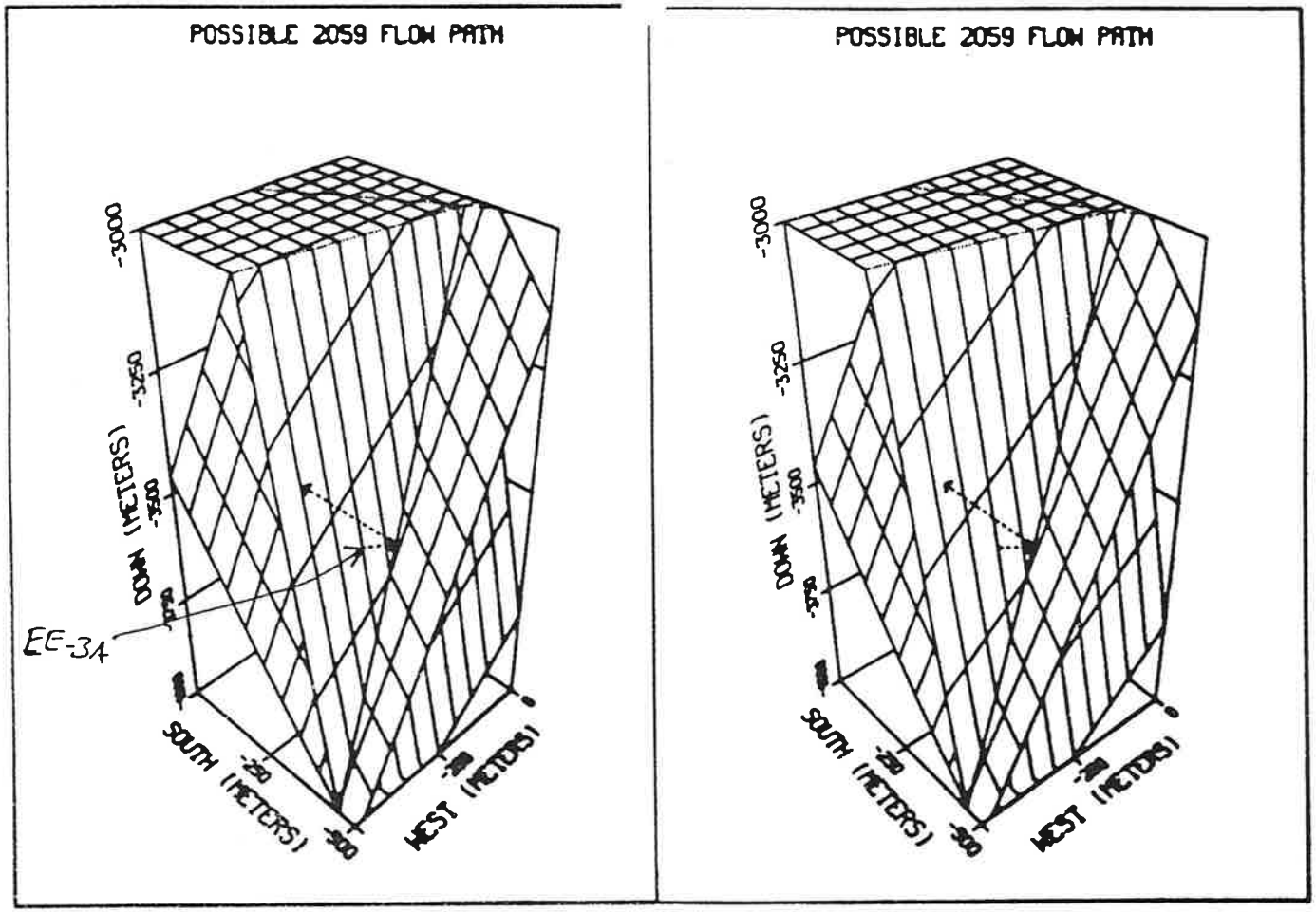

POSSIBLE 2059 FLOW PATH
-3000
-3250
-3500
DOWN (METERS)
EE-3A
SOUTH (METERS)
WEST (METERS)
POSSIBLE 2059 FLOW PATH
-3000
-3250
-3500
DOWN (METERS)
SOUTH (METERS)
WEST (METERS)

Fig 4